

# A Topographical Survey of Area E (Deans Acre)

By

Larry Phillips

Submitted 27/10/08

## Contents

Illustrations List	II
Introduction	1-2
Development Research for Heslington East	2-3
Historical and Archaeological History Overview for Heslington East	3-
The Prehistoric Period	4
The Roman Period	4-5
Anglo-Saxon and Anglo-Scandinavian Periods	6
The Medieval Period	6
The Post Medieval Period	7
The Modern Period	7-8
Original Evaluation Results	8-
Trench 120	9
Trench 121	9
Trench 122	9
Trench 123	10
Trench 124	10
Trench 125	10
Geophysical Survey	11
Methodology	12-
Equipment	12
Survey	12-13
Problems While Surveying	13-14
Results	14-
Overview	14
Problems	14
Outcome First Day	15
Outcome Second Day	16-17
3D Topographic Images	17-20
Conclusions and Recommendations	20-21
Appendix	22-
Raw Point Data	22-24
Bibliography	25-26

## Illustrations

Fig1	Deans Acre survey results	2
Fig2	The glacial moraine in which the University of York carried out excavations	4
Fig3	St. Pauls Church	5
Fig4	The remains of a hypocaust	5
Fig5	Heslington Hall	7
Fig6	The tree nursery	8
Fig7	Geophysical survey of Area E	11
Fig8	Diagram of field showing TST locations	13
Fig9	Boundary points 1-27	15
Fig10	Random points taken within the boundary	15
Fig11	Points taken from the main fence posts along the modern boundary	15
Fig12	Fence posts locations acting as known points	16
Fig13	The western side's boundary	16
Fig14	Random points taken within the western side	17
Fig15	The original 3D model from the eastern area	18
Fig16	Eastern areas interpretations	18
Fig17	Original 3D model of western area	19
Fig18	Western areas interpretations	19
Fig19	Cropped geophysical survey of Area E	20

## Introduction

In the August of 2003 a desktop study undertaken by the York Archaeological trust was carried out due to the proposed development of the university's Campus 3 Zone E (Macnab: 2004, 3). Fieldwalking and geophysical surveys then followed the desktop studies, with which geophysical anomalies were then targeted for the evaluation that took place between November 2003 and February 2004 (ibid, 4-5).

A range of research questions were outlined for the evaluation, with a few of such questions questioning the land use ranging from the prehistoric to World War II, while other questions focused more on the preservation of archaeological deposits and on the supposed position of the tithe barn (Macnab: 2004, 5-6). A total of 115 trenches were placed in the development area, six of which were placed in Zone E, Deans Acre (Fig1), targeting the geophysical anomalies in order to locate the tithe barn and both Roman and Medieval burials (ibid, 10).

The University of York, however, has proposed a road that will cut through Deans Acre and unsurprisingly, this has upset locals who insist that there are Roman burials and the tithe barn remains in the area (pers.comm. Steve Roskams and Cath Neal, Sep 2008). The York Archaeological Trust on the other hand have a different view (ibid), and so the aim of this project is to undertake a topographical survey of the area, that will hopefully not only be a reference for future use once the road has been put through, but will also hopefully identify certain topographical features that correlate with the geophysical results.



(Fig1: Deans Acre survey results, Macnab: 2004)

## Development Research for Heslington East

Research into the area's history, both historical and archaeological, was conducted by the York Archaeological Trust, accompanied by detailed maps of the area and the locations of the trenches. There does not appear to be, however, a map regression in their reports showing developmental changes within the landscape, though there are suggestive sentences that imply a map regression of a type that had been done, especially when referring to a 1775 map. The *"Heslington East site lies just south of an east-west ridge of a glacial moraine created at the end of the last Ice Age, one of only two such features allowing easier access across the Vale of York in prehistory"* (Roskams: 2008). Round Houses, enclosures, and field systems have been discovered through reconnaissance and evaluations on the site from the Iron Age people that once lived in the area before the Roman conquest of York, and so the research that will take place in the area will focus on the impact of imperial rule with the arrival of legions towards the end of the 1<sup>st</sup> century AD (ibid).

It is hoped that the research at Heslington East will shed lights on the following outlined issues;

*“How quickly was the impact of Rome felt - sudden transformation or evolutionary change? What form did it take - using existing forms of farming and landscape exploitation, or altering them by dispossessing earlier inhabitants and introducing new landholding systems and agricultural techniques?*

*Were such changes confined to functional needs, or was the area also subject to ideological domination, e.g. using thoroughly 'Romanised' architectural forms?’* (Roskams: 2008).

While in Area E, the research will be focused more on providing information on the tithe barn and any Roman burials in the area (Cath Neal, pers.comm 2008), as the community on a whole is upset about the decision to have a road developed through the field, it is important to put their minds at rest.

## **Historical and Archaeological History Overview for Heslington East**

Based on previous discoveries and sources, the historical backgrounds for the entire developmental and surrounding areas were laid out in detail by the York Archaeological Trust in their report, which covers;

The Prehistoric Period

The Roman Period

Anglo-Saxon and Anglo-Scandinavian Periods

The Medieval Period

The Post Medieval Period

The Modern Period

And for this reason, only a brief overview is given. For a more detailed account, please see the York Archaeological Trusts report.

## The Prehistoric Period

Prehistoric activity seems to have been concentrated on the high ground formed by the glacial moraine (Fig2) that runs from east to west along the Vale of York (Macnab: 2004, 12). During the fieldwalking that was carried out at Heslington East, a range of worked items were found although the majority date from the Neolithic onwards, while aerial photographs show evidence for settlements in either the late Prehistoric and/or Roman period (ibid).



(Fig2: The glacial moraine in which the University of York carried out excavations in 2008, Author, 2008)

Archaeological investigations in the area include; Field Archaeology Services at Heslington Hill (FAS: 2003) and "*...at Germany Beck*" (MAP: 1996) that lies to the south-west of Heslington East, about 2km away (Macnab: 2004, 12). Flint of a similar date was also found, identifying the moraines prehistoric importance (ibid). Geophysical surveys were also done within the development area as noted later (ibid).

## The Roman Period

The Roman Fortress lies about 3km to the East of Heslington East with which there are also two Roman roads known about, one to the north and one to the East of the site (Macnab: 2004, 13). There have been a large number of Roman finds in the Heslington

area, that also included two stone coffins (found in 1831) to the east of the parish church (Fig3) suggesting a cemetery while aerial photographs had identified a possible Roman settlement close to Heslington Hill (Perring: 1999, 21 cited Macnab: 2004, 14) and an excavation on Heslington Hill by the FAS discovered Roman pottery with Anglican pottery in the upper fills (FAS: 2003 cited Macnab: 2004, 14).



(Fig3: St. Pauls Church, Author, 2008)

During the excavations carried out by the University of York, a Roman settlement was discovered; complete with hypocaust (Fig4) and skeletal remains. Interestingly enough, the skeleton, a 26-35 year old man who suffered from iron deficiency anaemia during childhood, was shorter than the average height and died of tuberculosis (TB), as a result of which, it is thought that he could be one of Britain's earliest victims of the disease (Garner: 2008). According to folk lore, Deans Acre is supposed to also hold Roman Burials, and if true, it would certainly be interesting to see if there are any such similarities with the Burial found on the moraine.



(Fig4: The remains of a hypocaust, Author, 2008)

## Anglo-Saxon and Anglo-Scandinavian Periods

Place names are usually a good way to tell if there has been any involvement by invaders/settlers in the past, York and its surrounding areas are no exception to this as even the name Heslington has its origins in Old English meaning 'Farmstead near the Hazel wood' (Smith: 1970, 274 cited Macnab: 2004, 14). There have been a number of other Anglo-Saxon and Anglo-Scandinavian sites that have been discovered through out the area with Lamel Hill cemetery being probably the most widely known site, but little is still known about the way both York and the surrounding hinterland had changed from Late Roman to Anglian Period (Ottaway: 2003, 148 cited Macnab: 2004, 14).

More Anglian inhumations were discovered in 1983 at Belle Vue House in Heslington, and it is assumed that those were associated with Lamel Hill because of the close proximity (YAT: 1997, Site 1983.31 cited Macnab: 2004, 15). During work at the new University Medical School (near Heslington Hill), disturbed pottery and cremation vassals were discovered that possibly date back to the 5th or 6th century (FAS: 2003 cited Macnab: 2004, 15) and in addition to this there is evidence of an Anglian settlement and possible toft enclosure in the area (ibid).

## The Medieval Period

Drawing the information mostly from the Victorian County History from 1976, references are made to Heslington village and its layout that although cannot be confirmed, seems to match planning styles from the 11<sup>th</sup> - 12<sup>th</sup> century (Macnab: 2004, 15). Although the majority of history that is written about concerns certain areas of the development site and surrounding countryside, there are small references to Deans Acer itself. Extensive ridge and furrow traces were revealed following geophysical surveys at Heslington East which, along with fieldwalking results, suggests arable agriculture (Macnab: 2004, 17).

In 1299 a plot of land was leased to a York citizen for the feeding of animals "...*adjacent to St. Paul's Churchyard from the Prebend of Ampleforth...*" for which a tithe barn was built (VCHY: 1961, 498 cited Macnab: 2004, 16). The field lies within Area E in which evaluation excavations failed to uncover the position of any medieval building (Macnab: 2004, 16-18).

## The Post Medieval Period

From the mid 16th to 19th century, the creation of Heslington Hall (Fig5) by Thomas Eynns between 1565 - 1568 was a major change to the parish (Macnab: 2004, 17), and in 1609 Thomas Hesketh founded a hospital in the parish, but was completely moved to Fulford Road later (ibid).

The ridge and furrow mentioned earlier is cut by Heslington Lane, "*...the road is seen on Jeffrey's map of 1775... that also suggests building between Heslington Hall and the Church*" (Macnab: 2004, 18). Heslington Hall however, respects the road and so it must be from an earlier date, dating to at least 1568, while other roads started to be improved during the 18<sup>th</sup> century, notably what is now the York to Hull road (ibid, 18-19).



(Fig5: Heslington Hall, Author, 2008)

## The Modern Period

During the 19th century, the population of Heslington's village remained stable and the economy was still largely agricultural (Macnab: 2004, 19). Between 1855 and 1890 Heslington Lane was straightened and Windmill lane was laid out, the tithe barn to the east of the Church (Area E) was also demolished (ibid).

Results from fieldwalking and geophysical surveys suggest continued agricultural practice across the development area as well as modern interventions like telecommunication masts, park and ride facilities and a water pipeline (Macnab: 2004, 12). The water pipeline crosses area E, while the area immediately to the east of the Church (Dean's Acre) "...had been partially used as a tree nursery (Fig6) for the University in recent times" (ibid).



(Fig6: The tree nursery, Author, 2008)

## Original Evaluation Results

The development area was separated into different fields ranging from Field 1 through to Field 17, with Deans Acre being labelled as Area E (Macnab: 2004, 22). As mentioned before, there were a total of 115 trenches placed across the development area with 6 of those being placed in Area E, and as mentioned in the report; "...*The ground was slightly undulating in character, perhaps suggestive of previous gravel quarrying...*" (ibid, 130). This section will only outline those 6 trenches (ibid, 120 - 125), both they and the others can be seen in more detail in the official report.

### **Trench 120**

Located at the west edge (Fig1), trench 120 (measuring 6m long by 3m wide) was used to confirm the boundary for St. Pauls graveyard, which according to documentation had not changed "*...since the mid-19th century*", the medieval boundary for the graveyard was unknown though (Macnab: 2004, 130). Once the top layer had been taken off by machine and the hand trowelling began, the top deposits contained occasional brick fragments dating to the 19th-20th centuries, probably as a result of the tree nursery or restoration work done on the church wall (ibid). Deposits below these contained concentrations of brick and tile dating from the 13th-16th century, as well as other items that included an iron nail and a fragment of post-medieval glass (ibid, 131). A small feature was found, but it is assumed that this was caused with the removal of a sapling for use on the university campus (ibid).

### **Trench 121**

Trench 121 (3m square) was positioned at the north-west end of the site in the hope of revealing some information about the tithe barn (Macnab: 2004, 131). Again brick and tile fragments were uncovered from the top soil with later deposits again containing medieval material (that included a horseshoe) along with 19th/20th century brick, but there were also animal bones recovered (ibid). Animal and root disturbances were widespread and the excavation only really revealed "*...natural moraine sand, gravel and boulder clay*" (ibid, 132).

### **Trench 122**

With a geophysical survey already done on site, trench 122 (8m long by 3m wide) was intended to target an area of "*...magnetic disturbance*" (Macnab: 2004, 132). This trench contained plough scars that had been filled with topsoil, signs of root and animal disturbances as well as traces of Roman and 19th/20th century pottery and brick (ibid).

### **Trench 123**

As with the previous trench, trench 123 (8m long by 3m wide) was positioned to highlight a potential archaeological feature shown by the geophysical survey results (Macnab: 2004, 132). Recovered from the trench was a shard of tin-glazed earthenware and fragments of brick dating from the 14th-16th centuries, both of which were probably disturbed by animals (ibid, 133). The base of the trench showed a possible "*...backfilled tree-throw hole or a band of natural strata within the underlying geological deposits*" (ibid, 132-133).

### **Trench 124**

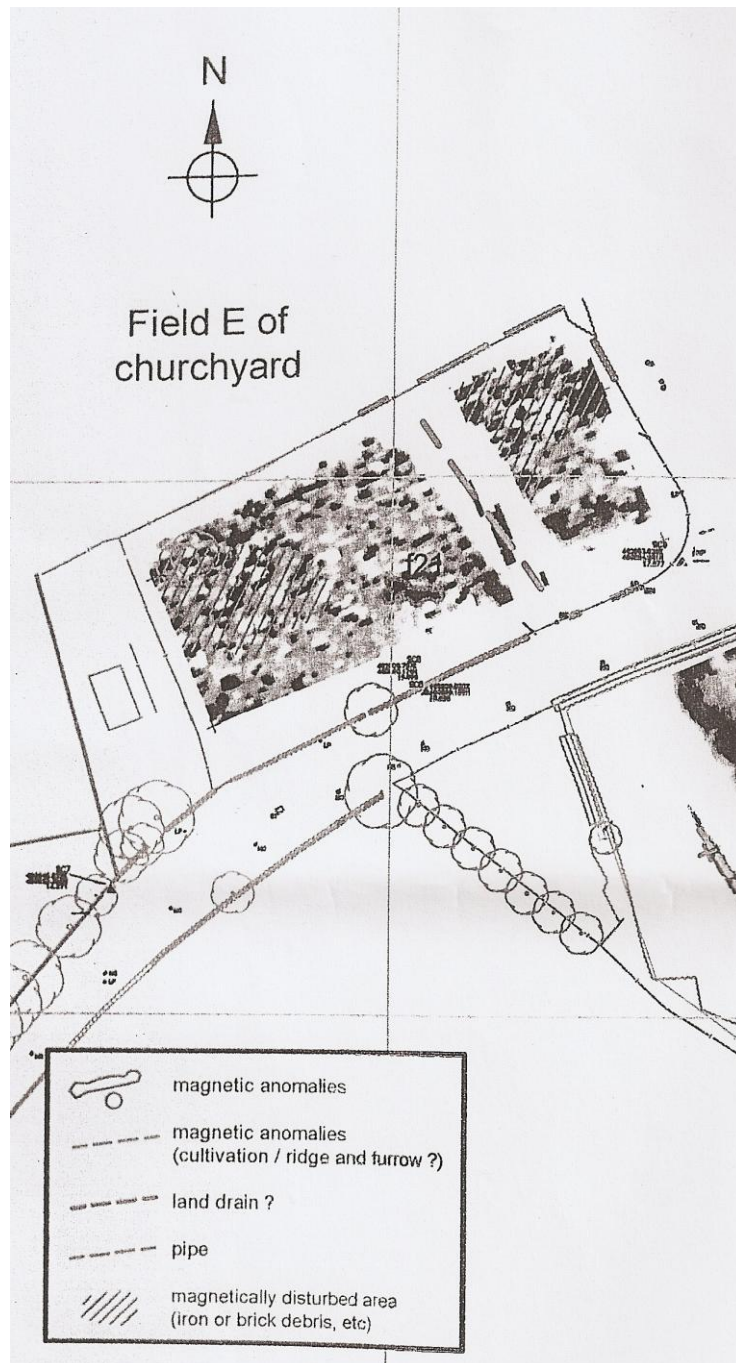
Trench 124 (8m long by 3m wide) was positioned in the eastern area in an attempt to ascertain the presence of Roman burials (Macnab: 2004, 133). A series of shallow parallel plough scars were discovered, while modern ploughsoil covered the entire trench to bring about its current raised ground level (ibid).

### **Trench 125**

Trench 125 (13m long by 2m-5m wide) was positioned in what was thought to be the location of the tithe barn (Fig1), a linear feature (interpreted as a furrow) was revealed to be truncating the natural running north-south (Macnab: 2004, 133). A Post medieval pot shard and a fragment of a tobacco pipe along with a series of narrow plough scars were also found (ibid).

## Geophysical Survey

As mentioned, a number of trenches were placed over geophysical anomalies. These anomalies can be seen on the survey done by Bartlett-Clark Consultancy below (Fig7). The survey shows a large area of magnetic resistance as can be seen below.



(Fig7: Geophysical survey of Area E, Barlett-Clark, 2003/4)

## Methodology

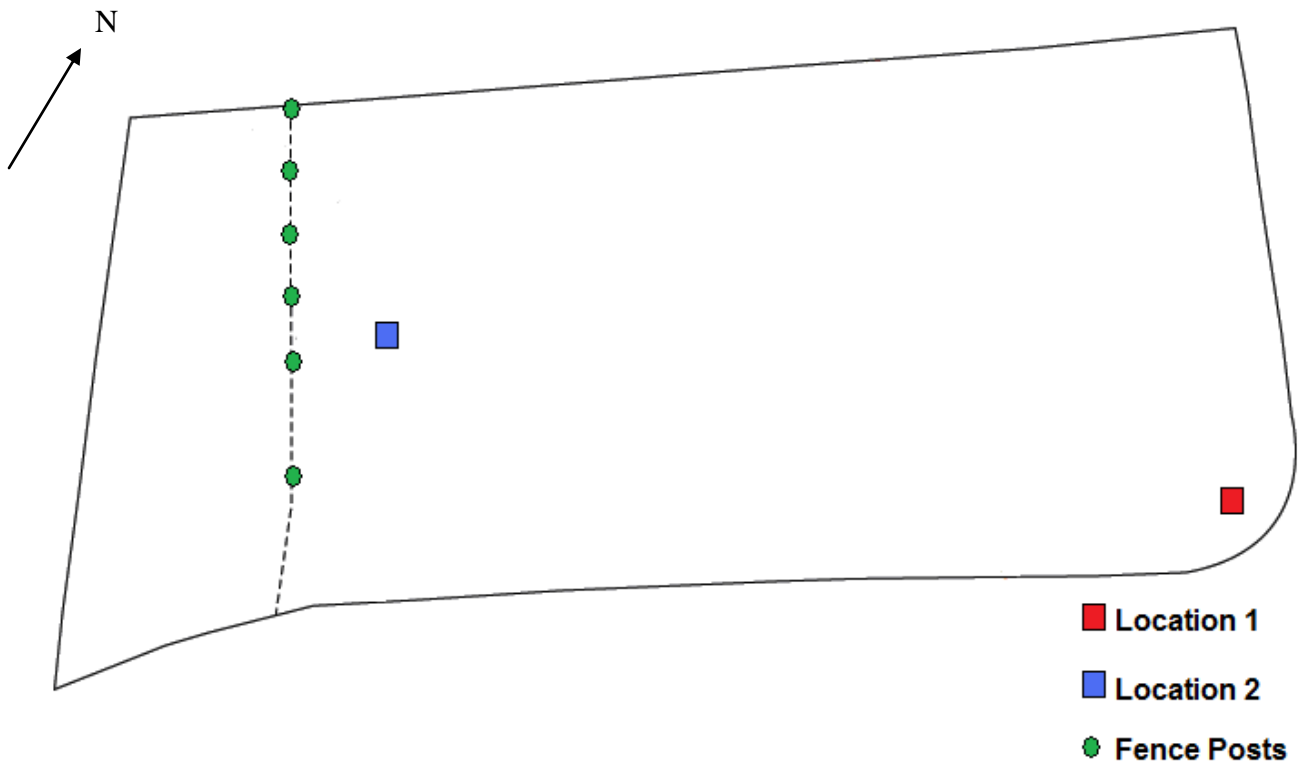
### Equipment

The equipment used for the survey was a FOIF R632 Total Station Theodolite (TST) and a standard prism. Once the TST had been set-up, it was a case of simply aiming the laser at the prism and recording the information. The information that was being recorded was the Northing, Easting and Elevation, and it is with this data that the topographical survey was produced. When the TST has been set-up, the height of the station should be measured and input as well as the height of the prism. From the different measurements the TST will recognise the height variations of the ground as the prism is being moved around.

### Survey

Starting in the bottom eastern corner (Fig8-Location1) and having set the TST position to Northing 0, Easting 0 and Elevation 0, the prism was placed every 4-6 steps across the field and measurements were taken. The field was split into two sections and surveyed over a period of 2 days. During the first day the eastern side of the present day fence (Fig1/8) was surveyed, while the western side of the fence was surveyed during the second day. The eastern side posed little in the way of problems; however, the western side was a little more difficult as will be described later.

Once the distances from the TST to the prism (including the elevation) are recorded, they can be taken from the TST's internal memory and placed into a specialised program that will reconfigure the data into something a little more meaningful, and to which is shown in the results section.



(Fig8: Diagram of field showing TST locations, Author, 2008)

### Problems While Surveying

During the two days there were only a few problems, with the first not being able to set a new point for the TST. A new point should be set when the area that is waiting to be measured can not directly be seen, thus a new point is needed. Upon starting the second day, the TST was placed in the same position as the first day (Fig8-Location 1) and the data loaded from memory. Trying to set up a new point however was never going to work as for an unexplained reason; the option (Slide Short Method) was not available. Having gone through the manuals instructions word for word, there was still no option showing, again it is unexplainable as to why this option did not show as it has worked in the past.

Having predicted the possible problems before starting the survey, I had already thought of ways to get around them. The solution to this particular problem was to take measurements of known points so that once the data is together on screen, the dots representing the known points from the second day can be aligned with those on the first day. To get a more accurate alignment, I decided that several known points were to be measured and that they would be at each post along the modern fence (Fig8).

The second problem that came about was due to the overgrowth within the western section, which caused problems while trying to fire the laser. The laser must have a clear shot and it was not always easy with the amount of vegetation in the way, which resulted, on a number of occasions, simply firing the laser and waiting for the wind to eventually blow branches and leaves out of the way. The tree nursery posed another problem, as it was impossible to survey behind without being able to set a new (would have been third) point. The decision was taken to survey around the front as much as possible, and then as the church wall ran in a straight line, simple to survey two points as close as possible either side.

## **Results**

### **Overview**

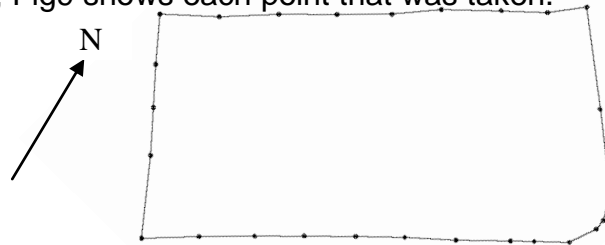
Once the survey had been completed, the information was taken from the TST and placed into a spreadsheet where the data was edited to create a meaningful piece of work. In this case every second row contained the point number and prism height and so each row was deleted, and extra columns were added that contained the same data. This spreadsheet was then converted into a txt file and inserted into a program called Terrain. There were a total of 181 points from the first day and 75 points from the second day, making a total of 256 points altogether.

### **Problems**

The Terrain program takes the information from the txt file and places it into the correct order. I did however; greatly overestimate the power of the program. My plan was to survey the field in two parts and then put them together using known points; I discovered that once the points are placed into the program it is not possible to move them in such a way, meaning that I would have to create two separate plans; not something I originally set out to do.

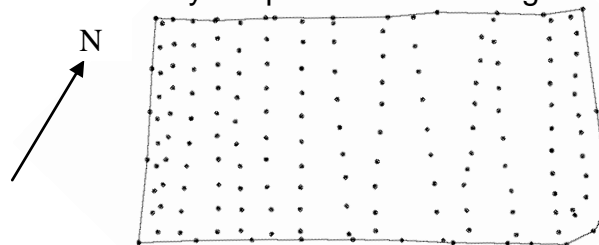
## Outcome – First Day

Firstly I split up the first 181 points (Appendix) into 3 separate files that could be inserted into Terrain separately in order to take a screen of each process involved. The first insertion was that of points 1-27 (Fig9). These points were the boundary of the eastern side of Deans Acre; Fig9 shows each point that was taken.



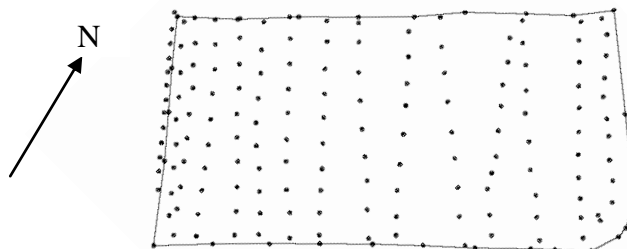
(Fig9: Boundary points 1-27, Author, 2008)

The next instalment was the random points taken within the boundary, namely points 28 - 167. The points were taken roughly every 4 steps up and down the field. There was no particular path, as can be seen by the points shown in Fig10.



(Fig10: Random points taken within the boundary, Author, 2008)

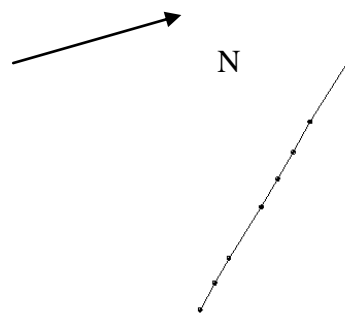
Finally for the eastern side of Deans Acre, several points were taken that would allow both the eastern and western sides to merge together as shown by Fig11. That was the original plan, but as I explain in the problems section the survey did not go exactly to that plan. However, each section can be done separately and then hopefully merged together at a later date with more technologically advanced programs.



(Fig11: Points taken from the main fence posts along the modern boundary, as seen in Fig1, Author, 2008)

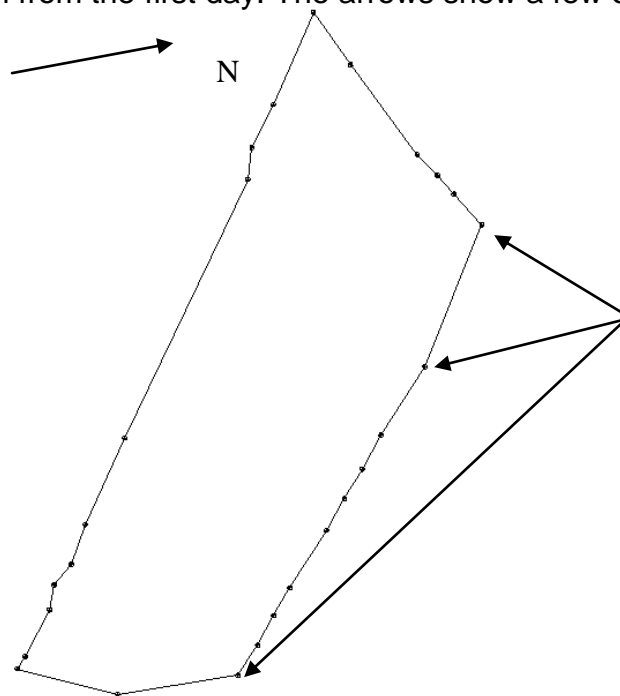
## Outcome – Second Day

As with the first day's results, the points were split up into separate files (Appendix) to allow for easy screen shots, starting with the fence points taken that will hopefully allow the two sides to be merged together at a later date. Fig12 shows the reference points taken at the fence posts in order to merge the two sections together.



(Fig12: Fence posts locations acting as known points, Author, 2008)

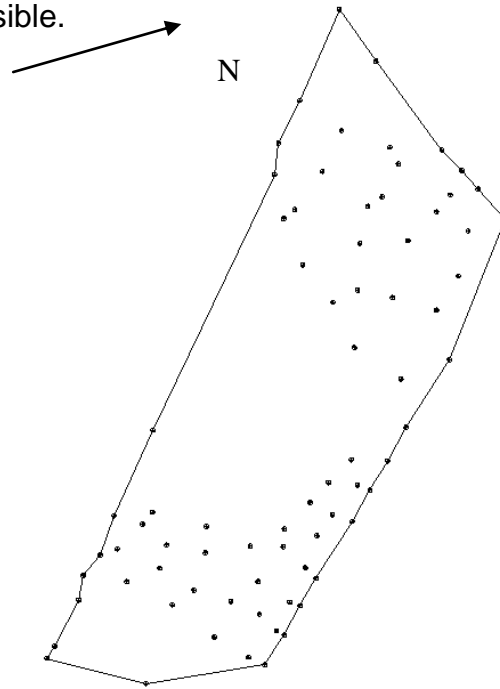
The second set of results built upon the first with the continuation of the boundary, as Fig13 shows. The points are now shown joined together to make the boundary, however there are a few points that would not be joined in such a way, as they would originally have been joined with points taken from the first day. The arrows show a few of such points.



(Fig13: The western side's boundary, Author, 2008)

The final insertion of point data comes from the random points taken within the area (Fig14), obviously missing the central area due to the tree nursery. Like with the eastern

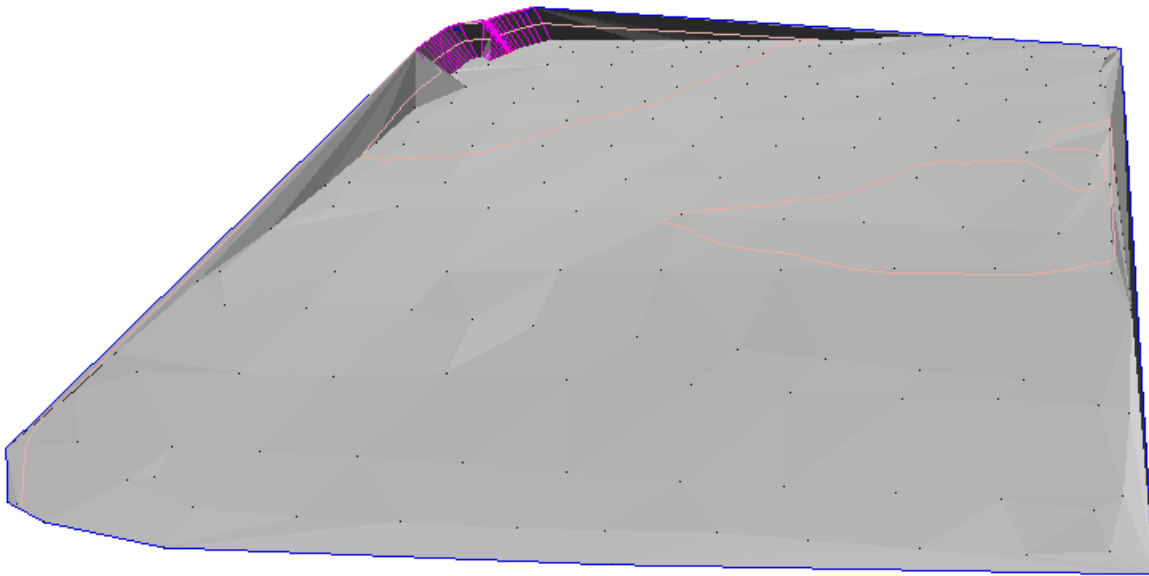
side, points were taken up and down every few steps. The church wall ran in a straight line and so the decision was made not to try and set up another location to be able to survey behind. As Fig14 shows, the wall is straight in that section and points were taken as close to the tree nursery as possible.



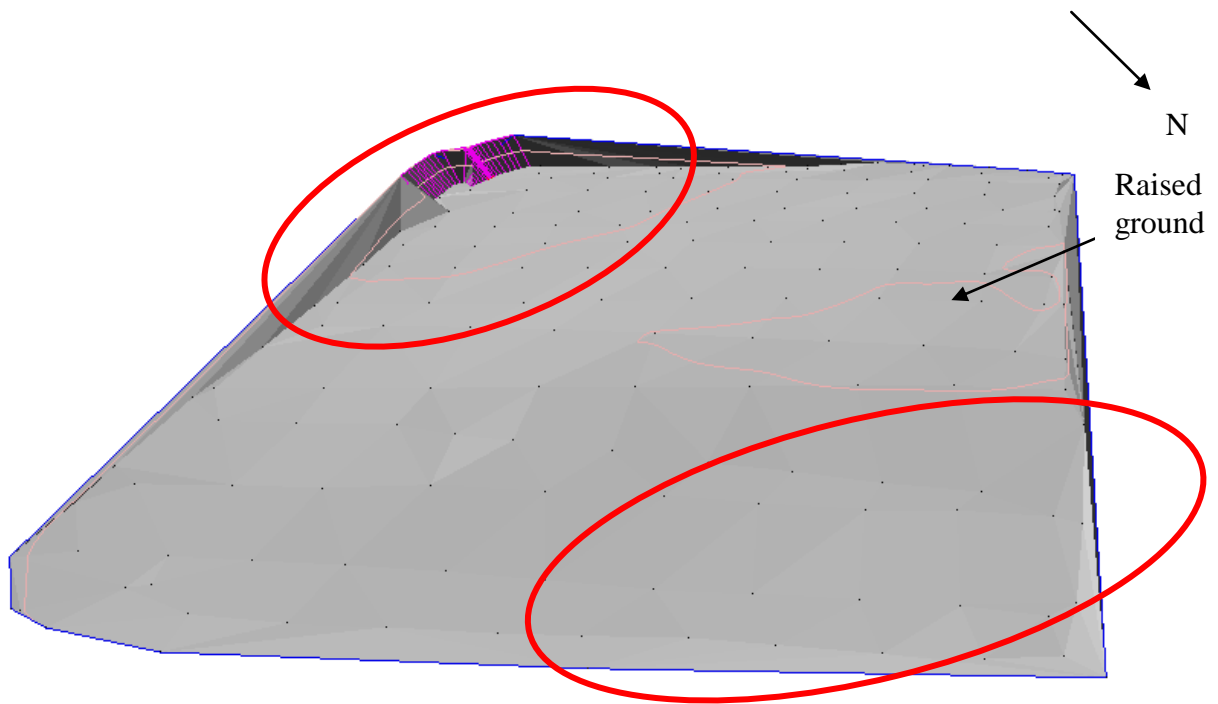
(Fig14: Random points taken within the western side, Author, 2008)

### 3D Topographical Images

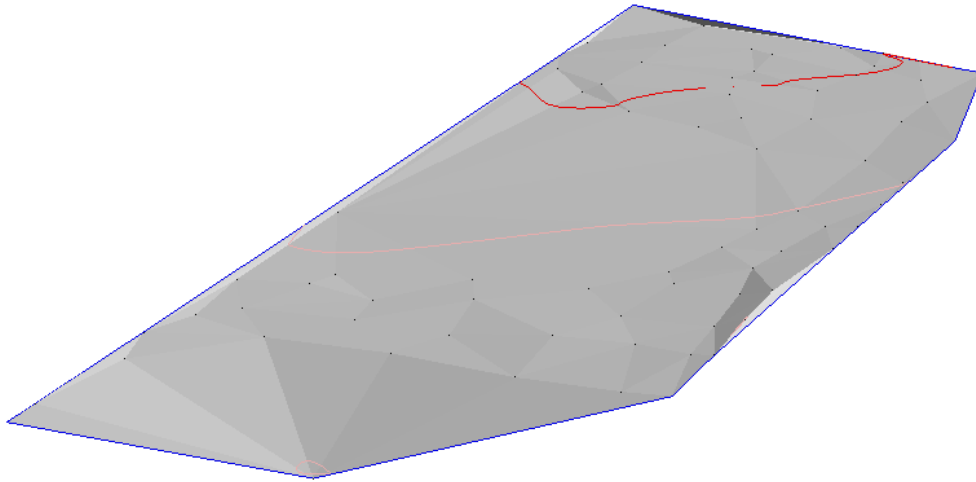
Once the two areas had been plotted, a 3D model could be made. The only problem being that Deans Acre is a small field with mostly slight elevations and so the 3D models are quite flat. Fig15 and Fig17 show the original 3D models for both areas, while Fig16 and Fig18 shows the highlights. The red circles show where the ground lowers while the raised ground has been pointed out, while the blue box on Fig18 is where the tree nursery is.



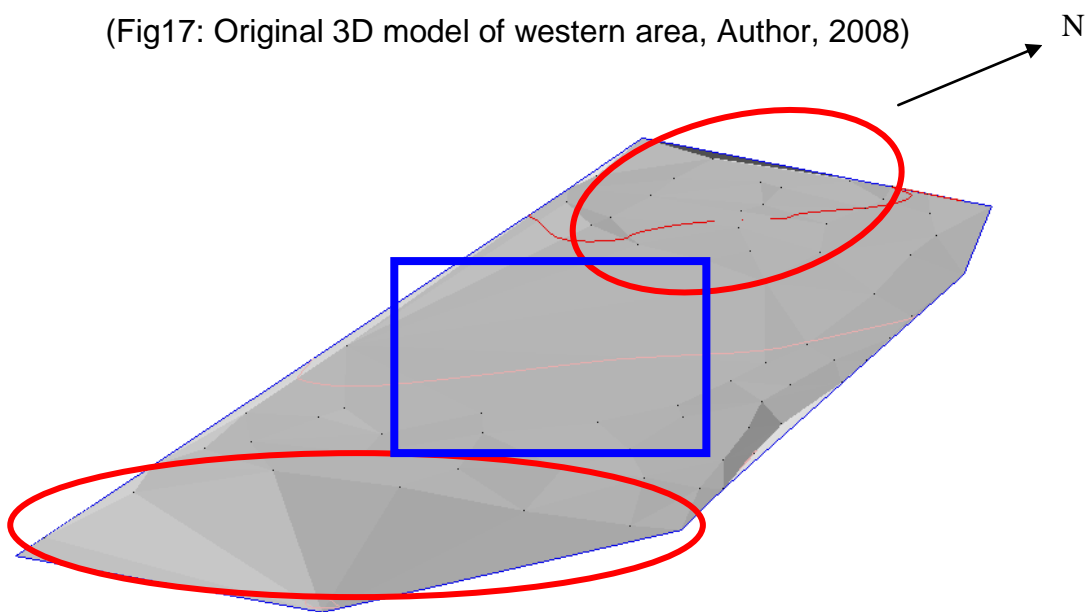
(Fig15: The original 3D model from the eastern area, Author, 2008)



(Fig16: Eastern areas interpretations, author, 2008)

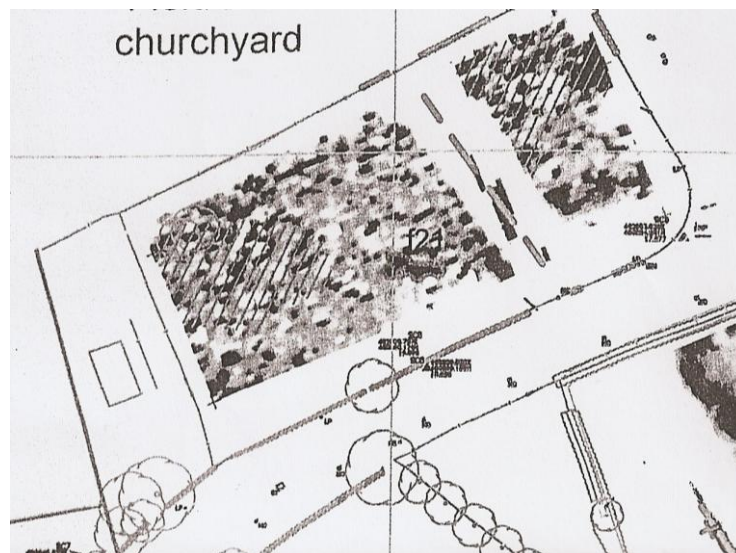


(Fig17: Original 3D model of western area, Author, 2008)



(Fig18: Western areas interpretations, Author, 2008)

When these are compared to the geophysical results (Fig7/Fig19-cropped version) there is an obvious pattern, the areas that show magnetic anomalies are the same areas that have lower ground levels. This, as mentioned before may just be a clear sign of previous gravel quarrying (Macnab: 2004, 22), although there were a number of artefacts dating from different periods discovered in each of the trenches that were placed over the anomalies.



(Fig19: Cropped geophysical survey of Area E, Barlett-Clark, 2003/4)

## Conclusions and Recommendations

From the evidence discovered during excavations, there does not seem to be any real evidence for a tithe barn other than fragments of brick, this does not mean to say that there never was one, but the current evidence suggests to the contrary. Roman burials were also not found. The undulating topography matches the magnetic anomalies and so possible further work may yield further results. Interestingly while working on the eastern side, an old gentleman came up to us and started talking, asking questions about the site and also mentioning that there was once a tithe barn. Looking at Fig1 and the locations of both the magnetic anomalies and trench positions, it is not only easy to see that the field had not been completely excavated or even surveyed geophysically as seen in Fig7. I feel that the lack of geophysics contributes to a lack of understanding and ultimately trenches are placed in wrong positions, as Fig1 shows only two trenches placed in the western side that both contained medieval material. Why were no other trenches placed further south of them? The tree nursery may itself be un-excavational, yet the land to the south is and may yield yet more medieval material.

As mentioned before, the community is worried about the impact the development of the road will have on any tithe barn remains or supposed Roman burials, and so they have to be assured that the work done will not damage anything that maybe there. This can be done in a number of ways, including; excavating the entire area where the road will be

developed and having the community join in or a more simpler option being to have a highly regard member of the community help oversee the work done on the construction of the road. Either way, I would recommend that work is done very closely with the local community to reassure them as the area is supposed to be protected from any development, yet the university won the right to develop a road through it. I would also recommend that a geophysical survey be carried out in the southern western area of Deans Acre, as the area as shown in Fig18 is lower. If this area is anything like the other lower areas of Deans Acre, then magnetic anomalies are sure to be there thus indicating possible archaeological material.



85	41.993	-19.181	-0.186	1.3	135	80.512	-27.987	-0.249	1.3
86	38.598	-23.346	-0.407	1.3	136	84.354	-24.121	-0.196	1.3
87	34.758	-27.189	-0.558	1.3	137	87.211	-21.293	-0.155	1.3
88	32.057	-29.984	-0.694	1.3	138	90.673	-25.126	-0.301	1.3
89	35.606	-34.376	-0.842	1.3	139	86.947	-28.678	-0.251	1.3
90	40.081	-30.473	-0.775	1.3	140	83.333	-32.29	-0.33	1.3
91	44.457	-26.299	-0.578	1.3	141	80.099	-36.143	-0.56	1.3
92	48.317	-23.171	-0.36	1.3	142	76.576	-40.149	-0.749	1.3
93	52.712	-19.604	-0.22	1.3	143	73.154	-44.125	-1.007	1.3
94	57.261	-15.789	-0.106	1.3	144	70.215	-48.022	-1.226	1.3
95	61.682	-11.869	0.037	1.3	145	67.323	-51.73	-1.436	1.3
96	66.181	-7.486	0.032	1.3	146	64.371	-55.662	-1.713	1.3
97	69.022	-4.775	-0.023	1.3	147	61.37	-59.086	-1.964	1.3
98	73.998	-9.06	-0.041	1.3	148	64.808	-62.198	-2.028	1.3
99	70.896	-12.029	-0.006	1.3	149	68.199	-57.983	-1.698	1.3
100	67.162	-16.271	-0.03	1.3	150	71.047	-54.255	-1.494	1.3
101	63.56	-19.932	-0.149	1.3	151	74.314	-50.059	-1.23	1.3
102	60.186	-23.449	-0.275	1.3	152	77.281	-46.28	-1.021	1.3
103	56.443	-27.326	-0.482	1.3	153	80.474	-42.513	-0.768	1.3
104	52.811	-31.099	-0.726	1.3	154	83.871	-38.147	-0.537	1.3
105	49.806	-34.401	-0.885	1.3	155	87.115	-34.834	-0.377	1.3
106	46.626	-37.823	-1.099	1.3	156	90.089	-31.418	-0.318	1.3
107	43.393	-41.037	-1.128	1.3	157	93.936	-27.778	-0.289	1.3
108	47.33	-45.818	-1.323	1.3	158	94.935	-29.908	-0.407	1.3
109	51.025	-42.173	-1.257	1.3	159	91.763	-33.908	-0.399	1.3
110	54.986	-39.29	-1.05	1.3	160	87.907	-37.726	-0.437	1.3
111	59.146	-35.267	-0.836	1.3	161	84.545	-41.549	-0.489	1.3
112	62.364	-32.025	-0.594	1.3	162	81.629	-45.141	-0.813	1.3
113	66.15	-28.03	-0.463	1.3	163	77.894	-48.8	-1.094	1.3
114	69.631	-24.451	-0.273	1.3	164	74.785	-52.434	-1.315	1.3
115	73.079	-20.676	-0.095	1.3	165	71.395	-56.514	-1.55	1.3
116	76.789	-16.969	-0.079	1.3	166	68.453	-60.072	-1.81	1.3
117	80.103	-13.878	0.01	1.3	167	65.28	-64.155	-2.129	1.3
118	83.18	-18.379	-0.06	1.3	168	97.772	-29.955	-0.525	1.3
119	79.348	-22.783	-0.138	1.3	169	95.626	-32.795	-0.422	1.3
120	75.973	-26.212	-0.203	1.3	170	93.706	-35.055	-0.368	1.3
121	72.683	-30.228	-0.406	1.3	171	91.737	-37.381	-0.356	1.3
122	69.44	-34.067	-0.625	1.3	172	89.927	-39.544	-0.37	1.3
123	65.905	-37.326	-0.83	1.3	173	88.095	-41.64	-0.406	1.3
124	62.113	-40.172	-1.061	1.3	174	86.029	-43.788	-0.683	1.3
125	58.719	-43.483	-1.228	1.3	175	84.435	-45.874	-0.928	1.3
126	55.417	-46.503	-1.418	1.3	176	82.324	-48.24	-1.084	1.3
127	52.457	-49.801	-1.558	1.3	177	80.321	-50.656	-1.247	1.3
128	55.879	-53.366	-1.678	1.3	178	78.418	-52.982	-1.404	1.3
129	59.134	-49.726	-1.522	1.3	179	76.484	-55.146	-1.54	1.3
130	62.624	-46.07	-1.316	1.3	180	73.884	-57.951	-1.647	1.3
131	66.362	-42.29	-1.049	1.3	181	70.392	-62.706	-1.94	1.3
132	70.028	-38.955	-0.83	1.3					
133	73.489	-35.558	-0.644	1.3					
134	76.941	-31.543	-0.371	1.3					

182	-0.728	3.333	0.08	1.3	232	1.905	10.22	0.165	1.5
183	12.62	2.339	-0.311	1.3	233	0.402	14.274	0.136	1.5
184	6.829	6.066	-0.023	1.3	234	2.123	12.71	0.086	1.5
185	3.967	7.652	0.144	1.3	235	4.057	10.758	0.025	1.5
186	1.441	9.141	0.27	1.3	236	10.986	6.513	-0.411	1.5
187	-1.21	10.677	0.465	1.3	237	13.698	10.493	-0.616	1.5
188	-6.061	13.757	0.954	1.3	238	17.535	12.315	-0.814	1.5
189	-8.432	15.11	1.007	1.3	239	20.738	14.92	-0.957	1.5
190	-10.939	16.493	0.996	1.3	240	24.714	16.542	-1.172	1.5
191	-13.495	18.166	0.941	1.3	241	25.503	15.597	-1.08	1.5
192	24.639	-2.467	-0.934	1.7	242	28.762	13.233	-1.057	1.5
193	27.248	-0.085	-0.988	1.7	243	32.247	11.603	-1.207	1.5
194	28.824	1.265	-0.995	1.7	244	30.814	7.443	-1.118	1.5
195	30.57	2.988	-1.118	1.7	245	25.753	9.338	-1.073	1.5
196	38.172	8.634	-1.733	1.7	246	22.608	10.02	-0.938	1.5
197	42.623	11.787	-1.675	1.7	247	18.583	10.22	-0.814	1.5
198	34.835	15.164	-1.563	1.7	248	17.949	7.232	-0.778	1.5
199	31.197	16.981	-1.235	1.7	249	16.885	3.474	-0.689	1.5
200	28.499	17.333	-1.148	1.7	250	19.784	1.56	-0.774	1.5
201	6.607	27.746	-0.186	1.7	251	22.828	5.914	-0.952	1.5
202	-0.731	31.092	0.161	1.7	252	26.58	8.106	-1.043	1.5
203	-4.111	32.252	0.298	1.7	253	29.405	6.703	-1.043	1.5
204	-5.846	33.723	0.495	2.1	254	25.292	3.473	-0.999	1.5
205	-7.939	34.077	0.536	2.1	255	23.659	0.761	-0.897	1.5
206	-11.869	36.161	0.935	2.1	256	26.742	2.268	-1.041	1.5
207	-12.905	36.808	0.896	2.1					
208	-15.072	28.345	-0.052	2.1					
209	-12.841	19.534	0.872	1.5					
210	-11.104	22.472	0.713	1.5					
211	-8.349	26.083	0.496	1.5					
212	-6.364	29.972	0.381	1.5					
213	-3.564	30.796	0.258	1.5					
214	-5.215	27.151	0.359	1.5					
215	-7.102	24.212	0.465	1.5					
216	-8.035	21.061	0.658	1.5					
217	-9.154	18.632	0.734	1.5					
218	-10.56	17.156	0.899	1.5					
219	-8.129	16.021	0.734	1.5					
220	-6.358	18.741	0.519	1.5					
221	-3.911	23.262	0.326	1.5					
222	-3.242	26.566	0.199	1.5					
223	-1.426	28.642	0.171	1.5					
224	-0.431	27.781	0.077	1.5					
225	-1.618	23.167	0.14	1.5					
226	-3.327	19.407	0.302	1.5					
227	-3.377	16.581	0.362	1.5					
228	-5.162	14.675	0.572	1.5					
229	-2.42	13.704	0.396	1.5					
230	-1.853	16.496	0.204	1.5					
231	-0.639	12.374	0.256	1.5					

## Bibliography

FAS, (Field Archaeology Specialists), (2003). *Heslington hill, Heslington: a post-excavation report*, FAS field report.

Garner, D. (2008). *Roman York skeleton could be early TB victim*.

<http://www.york.ac.uk/admin/presspr/pressreleases/campuskeleton.htm>. Page consulted: 29/09/08

Macnab, N. (2004). *Heslington East, Heslington, York: a report on an archaeological evaluation*. 133. York: York Archaeological Trust.

MAP, (Map Archaeological Consultancy), (1996). *Germany Beck - Fulford. Archaeological sample excavations: interim report*, map field report.

Ottaway, P. J. (2003). 'Roman Yorkshire: a rapid resource assessment' in T.G. Manby, S. Moorhouse and P. Ottaway (eds), *The archaeology of Yorkshire: an assessment at the beginning of the 21<sup>ST</sup> century*, Yorkshire Archaeological Society occasional paper 3, 125-149.

Perring, D. (1999). *An archaeological appraisal of the University of York Heslington campus, national grid reference ngr 625505* (copy held at York smr).

Roskams, S. (2008). *Roman occupation at Heslington East: Project outline and research design*:

<http://www.york.ac.uk/depts/arch/ugrad/courses.yrk/field/practicals/heslington%20east.htm>. Page consulted: 18/09/08

Smith, A. H. (1970) *The place-names of the east riding of Yorkshire and York*, English Place-Name Society, xiv.

Vchy, Tillott, P. (ed), (1961). *The Victoria history of the county of Yorkshire, the city of York* (oxford).

YAT, (York Archaeological Trust), (1997). *Archive gazetteer*:  
[www.yorkarchaeology.co.uk/gaz.index.htm](http://www.yorkarchaeology.co.uk/gaz.index.htm). Page consulted: 30/09/08